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THE AMERICAN JOURNAL OF PROCTOLOGY

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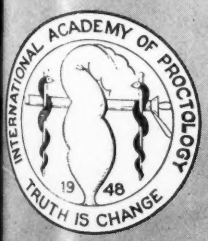

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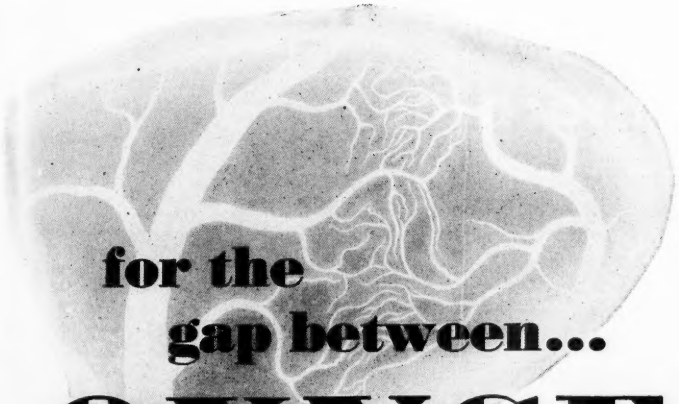

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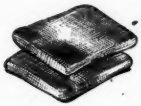

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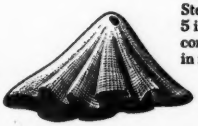

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The First Authoritative Journal of Proctology and Allied Subjects

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VOLUME 2 SEPTEMBER, 1951 NUMBER 3

PILONIDAL DISEASE—ITS EVALUATION AND TREATMENT

(A Report of 500 Cases)

HARRY WARD PARKER, M.D.
Lynn, Mass.

The directives from the Army, the Navy, and the Selective Service Boards all differ and change daily relative to the evaluation and treatment of pilonidal disease. Again this subject is brought to the fore as one of prime military importance. The articles that have been published on this subject during and since World War II, only brought out the genius of the surgeons who continually devised new and bizarre

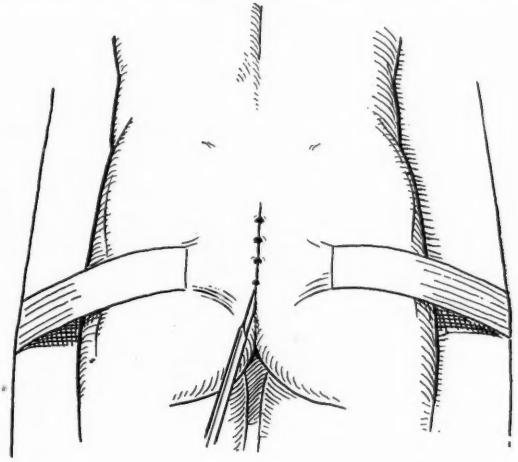

Fig. 1

technics. However, the incidence of recurrence is still too high, and the problem remains unsolved.

As this paper goes to press, the Selective Service Boards will not accept a candidate with a pilonidal sinus or cyst. It must be corrected before the volunteer or draftee is acceptable. Militarily this lesion is a nuisance since it is ordinarily trivial but incapacitating.

This disease is responsible for a morbidity out of all proportion to its pathology. During World War II, it accounted for a disproportionate loss of man power in terms of days lost from active duty, days spent in the hospital, prolonged convalescence, recurrences and medical discharge. Some experienced observers felt that during the war emergency this disease was so intractable that they preferred simple incision, drainage and recurrence to operative excision.

The 500 pilonidal sinuses that are herein reported have not been selected but "taken as they came". The results have been more encouraging than the opening paragraph would indicate. These cases have been operated upon by the author using one technic. The series is unique because it contains such an inordinate number of recurrent sinuses that have already been operated upon by Army and Navy surgeons. In a few cases, it represents a service-connected disability for which the Government is paying compensation.

This paper will not concern itself with a discussion of etiology. Many excellent studies have been presented on this phase which are all inclusive in their embryology and interesting theories and hypotheses[1,2].

It is the purpose of this report to point out some of the reasons for these failures and recurrences and to present a technic for the operation of pilonidal sinuses and cysts that has been preeminently successful. It has resulted in a complete cure with a minimum of morbidity.

It is interesting to note the following pertinent facts about the frequency of occurrence of pilonidal disease. Up until very recent times, no one surgeon could report a large series of cases that he alone performed. Impressive series were accumulated in large institutions and then the operations were divided amongst a number of surgeons. These men usually employed various surgical technics. Kooistra[3] who screened 313,285 admissions, covering 14 years experience at the University Hospital at Ann Arbor, Michigan reported a diagnosis of pilonidal sinus in 350 cases; an incidence of 1:940. The patients' age with the greatest frequency was twenty-five. This was not an accurate cross-section of the population because 30 per cent of these admissions were college students. Clark[4] mentions another series which is more representative of the actual age distribution met in civilan life. He states that in a ten year period from an institution whose admission was more public, there were 336 patients with pilonidal disease in over 700,000 admissions. The incident rate of this later series was 1:2100. The patient age with the greatest frequency was 31. Buie[5] of the Mayo Clinic states that pilonidal disease was observed in one out of every 3,700 patients, and one of every 200 patients referred to the Proctological Clinic had the affliction. Their average age was 33.5. These statistics bear out the findings of the Army and Navy Personnel. The Armed Services were made up of millions of men of an age group that had the highest incidence of this disease. This concentration of young men, together with the fact that pilonidal sinuses occur 4-5 times more frequently in men than in women, gave the Army, Navy and Air Force an unusual opportunity with the treatment of pilonidal disease.

The statistics therein reported as to the frequency of the malady needs interpretation. They were assembled from an institution that is a State Veterans' Hospital, and its admission public is not representative of the actual age distribution in a large public hospital. Since the publication of the first report on this technic[6], a new 300 bed hospital has been added to this institution which has greatly increased admissions. This report statistically ends on June 30, 1950. However, since that time, with the increase of military activity in the Far East, there has been an even greater incidence of men with pilonidal disease appearing at the clinic. This hospital admitted 10,992 patients in a five year period covered by this report (July 1, 1945-June 30, 1950). Of these patients, 500 were operated upon for pilonidal disease. An incidence of about 1:25. One out of every six patients referred to the O.P.D. Rectal Clinic had pilonidal disease. The youngest patient operated upon was 18; the oldest 51 years of age. By far the

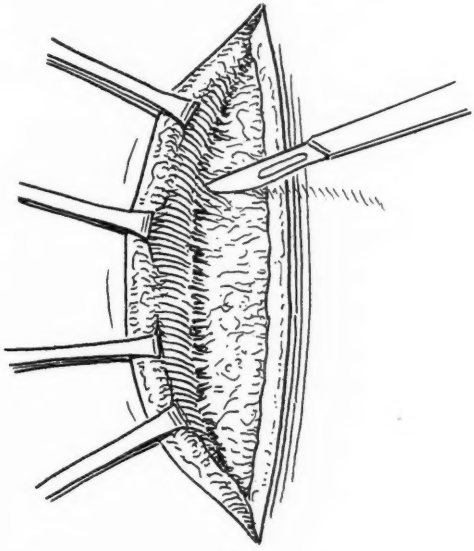

Fig. 2

largest group were those in the early part of the second decade. Our operative records show that almost 40 per cent had at least one unsuccessful operation previous to admission. These do not include the many that had simple incision and drainage. Only 20 per cent had no previous surgery whatsoever. Many had been submitted to surgery two and three times, and one patient had rolled up a total of nine different operative attempts. Not all of the pilonidal patients seen in the rectal clinic were operated upon for one reason or another. The most frequent reason being that "they had enough".

Those men who were operated elsewhere while in the service were hospitalized from three weeks to over one year. The number of man or soldier days lost because of this slowly healing wound exceeded by far the days lost for the treatment of any other remedial defect.

Examination of the recurrent sinuses revealed the ingenuity of the operators in the search for a cure. Failures occurred in such operations as open excision and drainage, marsupialization, the pedicle-flap operation, partial closure, complete closure, excision with secondary graft, excision with lateral incisions, complete closure with tension, excision en bloc with cautery, etc.

A study of these failures at the operating table disclosed one common and glaring fault. That is, in spite of extensive excision, some part of the sinus tract was not excised. In not a few cases the entire tract was missed. It was amazing to find a long linear scar that extended up the small of the back, perfectly healed for 9/10ths of its length and its

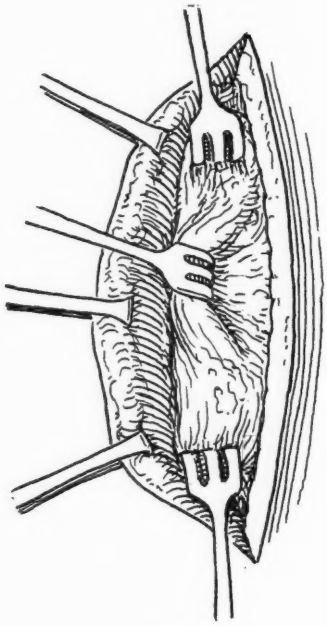

Fig. 3

caudal extremity actively draining. It was always surprising to note the extent of some of the scars. Primary pilonidal sinuses lie over the sacricoccygeal junction, infrequently extend great distances caudally or cephallically. In my opinion not a few failures resulted because the operator in his enthusiasm to get all of the sinus extended his dissection high and wide; yet, paradoxically missed the pathology at its origin because he did not know where to find it.

Where improper closure was responsible for recurrence there was always a granulating sinus tract present that indicated that the dead space in the wound was not eliminated; and in spite of the overlying epithelization there was incomplete healing from the original excision and closure.

Infection, of course, plays its role in recurrence, and one can reasonably ask why the same factors which govern healing in other parts of the body do not operate about the perianum and sacrum. Why such chronic granulating wounds?

There are two types of unusual infections which occur in this region that are important factors in healing. The first is infection by the microaerophilic hemolytic streptococci. In and about the perianum, scrotum and sacrum, this organism produces multiple superficial sinuses, the so-called "watering pot" fistula. When this infection occurs in conjunction with pilonidal cysts it produces multiple external secondary sinuses in the mid-line or laterally that are active and discharge pus in considerable quantity.

Meleney[7] demonstrated that these organisms are the cause of burrowing lesions of the skin. It is probable that the original infection began with a pilonidal abscess, a mixture of aerobic and anaerobic organism, streptococci, staphlococci, and colon bacilli.

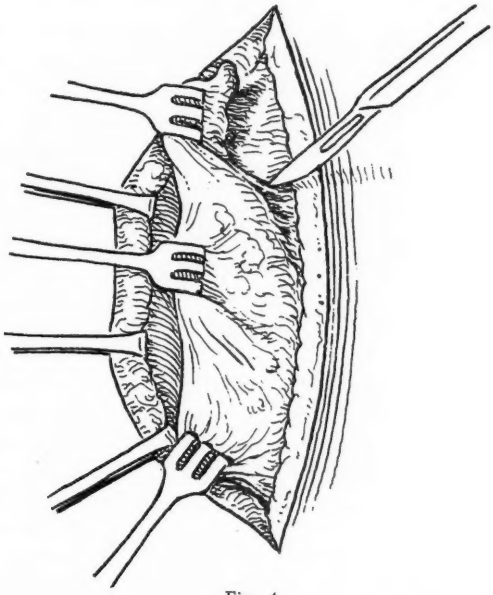

Fig. 4

These organisms have a very low degree of virulence. As long as the lesions actively drain there is no febrile reaction. The term microaerophilic refers to the fact that they grow best under lower oxygen pressure.

When there is an overwhelming infection with these organisms the local pathology may be extensive. As it relates to pilonidal disease it produces superficial fistuale with pin point openings that connect with the original cyst. After excision of the pilonidal sinus, and in spite of the technic employed and with great care in the postoperative treatment, these organisms may nevertheless infect the wound to produce draining sinuses and prevent healing.

Originally the treatment of this infection was incision and drainage with zinc peroxide paste packing. In this clinic, constant wet tyrothricin (2.5 per cent) dressings have been substituted with excellent results. This wet dressing is used routinely on all postoperative cases. As an antibiotic, tyrothricin has been found a highly potent, topical bactericide, particularly against gram-positive pathogens.

The second important but little noted factor for the failure of sinuses to heal is a fungus infection. Anyone who has had even a limited experience with pilonidal sinuses has waited for weeks and months for final epithelization to take place. The last few centimeters keep granulating but the skin does not grow across. If it is sutured secondarily it breaks down. Granulation buds persist and treatment with curettage and silver nitrate make slow headway.

The clue to the fungus infection was discovered trying to heal perineal wounds following abdominoperineal resection. Patients complain for months of drainage and itching. The perineal sinuses close and break down every few weeks. To relieve itching and chafing from a draining perineal sinus rather than to promote epithelial growth, drying fungicidal powders were prescribed. In a few weeks the wounds were solidly healed. Empirically, sluggish postoperative pilonidal sinuses were given a fungicidal powder or ointment, and the results were most gratifying. Those patients who had

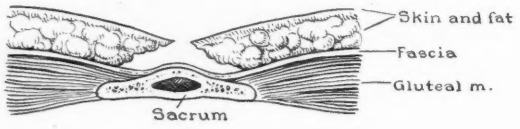

Fig. 5

dermatomycosis pedis were particularly helped. The newer fungicides which contain propionate-propionic mixtures (Desenex and Sopronal) were equally effective.

due to the rubbing together of opposing surfaces of the wound. Treatment here is best

There are some cases, particularly the obese type, that produce excessive granulation tissue. In these there exists a mechanical factor; the tissue is stimulated or irritated directed to the causative factors by covering the raw surfaces which come in contact with one another with flamed adhesive tape.

In a few cases, a saturated magnesium sulfate solution was used to combat excessive granulation tissue. Its favorable action is based on the principle that with crystalization of the solution, osmosis will draw water from the tissue. Of equal importance is the fact that tissue growth proceeds at an optimum rate in an environment of hydrogen ions in high concentration. That is in an alkaline surrounding. It is also noteworthy that pathogenic bacteria produce acid in the tissue, and infected wounds contain a low concentration of hydrogen ions. A clean wound has a pH of 7.3. This therefore is a rationale of the uses of those agents with a pH slightly above neutrality (pH 7).

From a technical standpoint we hope that the operation employed would do two things: First, offer the patient a good chance of cure without recourse to further surgery; Secondly, to heal sufficiently so that he could return to work with impunity two

or three weeks postoperatively. As it turned out, most of the patients were completely healed within three to five weeks. None of the procedures we knew about could meet these criteria.

The operation about to be described resembles a marsupilization technic except for the following differences: An endeavor is made to enucleate the entire cyst wall rather than save part of it. This seems to be more rational and based on sounder surgical principles than leaving part of the cyst wall intact. Interrupted pulley sutures are employed to bring the skin edges down without tension to the sacral fascia.

There was no selection of patients. All cases were treated exactly alike. The acutely infected pilonidal cyst or abscess was drained and the cyst or sinus excised and sutured as were the chronic, quiescent infections. It was often necessary to open and drain a pilonidal abscess in the Out-Patient Clinic as an interval form of treatment because the patient could not be admitted for lack of hospital accommodations.

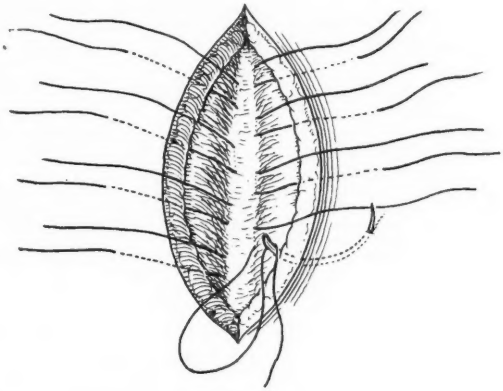

Fig. 6

Resume of Treatment

Patients were admitted 24 hours before surgery for the usual laboratory studies. No sulfonamides, penicillin or other antibiotics were given preoperatively. A routine cleansing enema, preparation of operative field, and sedation were administered the night before operation.

Operation:—Patients are placed prone on the table with a pillow under the hips or the table is slightly broken. Adhesive straps are used if necessary. Operation is performed under spinal or local anesthesia. The most careful aseptic technic is employed, being always aware that most cases are already infected, and care taken not to introduce further infection. A deliberate attempt is made to preserve all the skin that is compatible with complete excision. On many occasions, I have made an incision in the midline through the multiple orifices with no attempt to excise them, and there has been no retard in the rate of healing. The finest plain catgut ties and sutures are used; absolute hemostasis is of prime importance. A suture on a small non-cutting full curved needle

is used on bleeding points on the sacral fascia. Most of the other "bleeders" will be arrested by pressure of the hemostat.

Technic:—A midline incision is made over the pilonidal area. This incision is carried down to the base of the cyst usually to the sacral fascia. The incision is also carried beyond the area of induration. An attempt is made to have both the extremities of the wound sloping down towards the base at an angle of 450 or more degrees. With a small blade the skin edge is undercut on each side of the incision for a depth of ½ inch. Allis forceps are applied to the skin edge. Double hooked forceps are now applied to the lateral cyst wall. With traction on the double hooked forceps and sharp dissection the cyst wall is peeled away laterally until normal yellow fat globules are seen. This procedure is carried out on both sides; the cyst being removed in lateral halves down to the sacral fascia.

After complete hemostasis the skin sutures are inserted. Using a medium sized stay needle and number 3 black silk, the first suture is inserted at the upper end just to one side of the midline through the sacral fascia taking a bite of one and one-half inches. The same suture is continued back through the free skin edge. After all sutures have

Fig. 7

been inserted on both sides, they are tied, and the ends cut long. The usual excision required four sutures on each side. There must be no rolling under of the skin when the suture is tied and they must not be placed with too much tension. The dried blood is washed from the skin edges with sterile saline and a wet dressing of 2.5 per cent tyrothricin solution is made. Over this dressing, a tight sterile pressure pack is applied. It should be noted that with this technic the *bête noir* of dead space is avoided.

The patient is returned to the ward where he may lie flat on his back or assume any position that is comfortable. We use parenteral penicillin and topical tyrothricin postoperatively. The day following the operation, the dressings are removed, and constant wet tyrothricin dressings are applied and kept in place with a T binder. Patients are placed on a low residue diet, no bowel movements for 4 days, tincture of opium is prescribed if necessary. On the fourth postoperative day, all the skin sutures are removed and the area painted with 2 per cent gentian violet solution. If there are no complications or sequelae, patients are discharged home (5th postoperative day), with instructions as to care. These instructions consist principally of keeping the area clean by using 50 per cent hydrogen peroxide irrigations and application of penicillin ointment on a fluff of cotton. This dressing is kept in place with a kotex pad and belt or kotex and jockey shorts or kotex with an athletic supporter put on backwards.

Patients are instructed to return in one week following their discharge from the hospital. At the Out-Patient Department, they are watched carefully for abnormal bridging and infection. They are treated here with silver nitrate sticks to stimulate healing and dry sterile dressing. Most of the sinuses are healed in 3-5 weeks.

In evaluating precisely the healing time, we ran into clinical difficulties. First, the patient may be for all intents and purposes entirely healed except for a small recurrent bud of granulation tissue. Shall he be considered as healed? Second, patients appear two weeks after the operation with healing wounds that are filling in rapidly; then may next appear at the clinic again in 4-6 weeks, completely healed. The problem is to determine when to consider him healed—3 weeks or in 8 weeks?

Of course there are occasional "strays" that are 3-4 months healing. These were very rare and in all cases were recurrent sinuses that had been previously operated upon. Complete control of these patients was a practical impossibility. Only a conservative

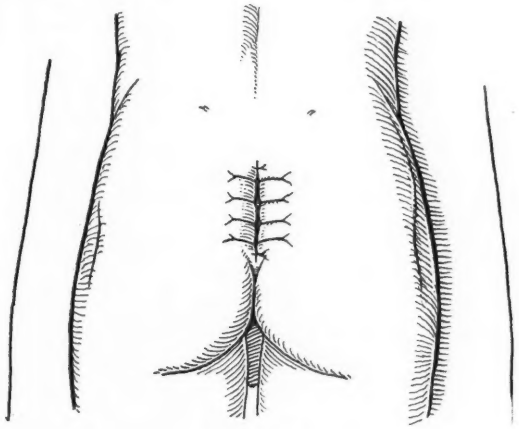

Fig. 8

clinical estimation can be made. The average healing time of these patients were from 3-5 weeks. There was one case that had a persisting draining sinus for 11 months postoperatively. One day he sloughed out a silk suture and then proceeded to heal solidly within 48 hours. These unusual exceptions raise the average healing time; and since they are rare exceptions and not the rule, it does not seem logical to include them in an estimation of average healing time.

Summary

This is a report of 500 cases of pilonidal disease at the Captain John Adam's Hospital, Lawrence Quigley Memorial Hospital and Soldiers' Home at Chelsea, Massachusetts, a State Veterans' institution.

It discusses some original thoughts contributing to the failure in the usual treatment of pilonidal disease. It describes an operation that is simple and preeminently suc-

cessful. There were less than 1 per cent failures in the surgery of primary or recurrent pilonidal sinuses. The average healing time in these cases using this tehcnic was 3-5 weeks.

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LOCAL METHODS OF TREATMENT OF CARCINOMA OF THE RECTUM

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In this paper the limited indications for the use of local methods of treatment of carcinoma of the rectum will be discussed, but it must first be stated that, with our present methods of preoperative estimation of the extent of the spread of the tumor and apart from their use as palliative measures, it may be very difficult to decide in which particular case one of the local methods of treatment should be used. In practice their use is confined to less than 4 per cent of all cases of carcinoma of the rectum. For example, in a series of 168 new cases of carcinoma of the rectum treated at St. Mark's Hospital local excision was employed on five occasions and rectosigmoidectomy on one[1].

If it were possible to determine accurately the extent of spread of a tumor prior to operation, a local operation would be all that is needed for most of the 'A'* and for some of the 'B'* cases (Wilson[2]). Even in the absence of such knowledge, one of the local procedures is the method of choice in certain cases of carcinoma of the rectum. However, these procedures have the disadvantage that during the operation it is not the rule to explore the peritoneal cavity and to examine the liver and colon. Furthermore, it is not usually possible on rectal examination to determine whether any mesorectal lymph glands are involved by the malignancy. This is generally solved by the passage of time, but it may be years before the presence of metastases becomes obvious; and even a patient that remains alive and well for five years is probably, but not necessarily, an 'A' or 'B' case.

Technic

Local methods of treatment of carcinoma of the rectum include: 1. local excision and suture, 2. fulguration, and 3. rectosigmoidectomy.

Local excision may be performed by pulling down the tumor on a true or false pedicle, dividing with the scalpel or the diathermy knife and then, if necessary, coagulating the base with the diathermy. Sometimes a tumor may be dealt with after being pulled down on the apex of an intussusception.

If desired, the pedicle may be transfixed with catgut before division; or, after excision, the coagulated area may be oversewn with catgut. Care is necessary during the insertion of the transfixion or other sutures lest they penetrate deeply and infection spread to the perirectal tissues. A tumor, less than half an inch in diameter may, when local treatment is indicated, usually be treated by fulguration without suture.

Most tumors of the rectum that are treated by excision and suture should not be completely removed before some of the sutures are inserted. On the other hand, if, after excision of the tumor, the wound extends down onto the anus it should be left open.

If the pedicle is rather broad it may be ligated and divided in parts, or a constricting ligature may be applied and the tumor allowed to slough. This constricting ligature

*Dukes' classification[3]. 'A' case—malignancy limited to the rectal wall. 'B' case—extrarectal spread but no metastases. 'C' case—lymphatic metastases present.

must be tightly applied around the whole of the pedicle, but even then it may be two or three weeks before the tumor separates and this is rarely a desirable method of treatment. If it is indurated the base should, of course, be widely excised or fulgurated.

In some cases if the tumor is not readily accessible from the anus it may be brought down to the anus and a local excision performed after mobilizing the rectum from above. If it is not possible to pull the tumor down to the anus it may sometimes be removed with a diathermy snare or with Frankfeldt's diathermy forceps.

The technic of rectosigmoidectomy is described in detail by Gabriel[4] and need not be discussed here.

Spinal anesthesia is the anesthesic of choice for local or diathermy excision but not for rectosigmoidectomy. In the latter instance the contraction of the bowel may add to the technical difficulties of the operation or may subsequently be a factor in producing some separation of the suture line.

During the operation care should be taken not to overstretch the sphincter or the paralysis may be permanent.

Indications for Local Excision of Carcinoma of the Rectum

The ideal case of carcinoma of the rectum for local excision and suture is one in whom there is a focus of low grade malignant changes in a pedunculated adenoma or polyp, which is not ulcerated and which is easily accessible from the anus, and in whom it is certain that there is no malignant extrarectal infiltration or metastases. Such a case is rarely found for difficulties arise in eliminating the possibility of extrarectal spread on clinical examination[2]. Occasionally it is possible to palpate a ridge of malignant tissue extending upwards from the primary tumor or an enlarged mesorectal lymph gland may be palpable; but, with most small superficial tumors of a low grade of malignancy there is no way of determining the extent of the extraretcal spread. However, if the induration at the base of the tumor does not extend deeply into the rectal wall, if the tumor is not deeply ulcerated, and if it is of a low grade of malignancy and is less than 2 centimeters in diameter, then it is unlikely that there are any metastases, and local excision is often indicated. Nevertheless, it occasionally happens that even in such cases metastases are already present in the mesorectal lymph glands.

In practice, unless the tumor is of a relatively high grade of malignancy local excision is also indicated in some cases when the tumor is small and accessible but is sessile and not pedunculated. This is especially so if, because of the extremely poor general condition, as in a frail old patient, or because of the existence of another lesion such as active pulmonary tuberculosis, the patient would be unable to withstand a more major operation. It is, of course, better to have a patient alive after a local excision with some chance of cure, however, small, than to have had a fatality after a more radical operation or to have refused him the benefit of any operation. At some time after excision of the primary tumor and if it is then considered necessary a radical operation may be performed when the general condition has improved sufficiently. If the general condition does not improve, the patient is unlikely to live long enough to be affected by the development of metastases.

The presence of an incurable primary malignancy in another organ apart from the rectum provides an indication, when it is possible, for limiting the resection of a rectal carcinoma to a local excision or to fulguration.

If at operation hepatic or peritoneal metastases are found, local excision and suture may sometimes be employed to remove the primary tumor, either through the anus or more rarely still by directly opening the bowel through the peritoneal cavity. Many of the cases falling into this category will, if local treatment is indicated, be more suitable for fulguration.

Local excision also has a place in the treatment of patients who, against advice, refuse to undergo a radical operation and colostomy and in whom the tumor, although relatively small and accessible, would not ordinarily be considered suitable for local excision. Some cases of this group will be better treated by an abdominoanal excision than by a local operation.

In the patient in whom because of the poor mental condition it is most desirable to avoid a colostomy, local excision may sometimes be employed if this is technically possible despite the fact that the case is not an ideal one for local excision.

If there has been a previous pelvic abscess or if for any other reason considerable technical difficulties are to be expected a radical operation is sometimes better avoided and, when possible, the resection limited to a local excision.

From time to time patients are seen in whom the clinical diagnosis is that of a benign tumor and one or more biopsies show no sign of malignancy, but following a local excision a small portion of the tumor is found to have malignant characteristics. Such cases should be kept under observation for many years. Immediate radical excision on receiving the pathologist's report is rarely necessary if the local excision of the tumor appears to have been complete. It is because of the frequency of such findings that all apparently innocent tumors of the rectum require careful microscopical examination.

In most cases a villous tumor that is showing any malignant changes should be treated by some other method of resection than a local excision since, with such a tumor, there is considerable risk of implanting fragments of the tumor in the cut ends of the bowel, or of only partly removing the tumor, or of overlooking other innocent or malignant tumors further up the bowel.

Indications for Fulguration of Carcinoma of the Rectum

These indications are, for the most part, similar to those given above in the discussion on local excision and suture; but, in addition, fulguration of the surface of the tumor with or without curettage may be employed as a palliative measure to reduce the discharge and hemorrhage from an irremovable carcinoma of the rectum or from a carcinoma of the rectum in a patient with numerous hepatic or peritoneal metastases or with another disease which will soon prove fatal. This procedure may also be used as a preliminary measure prior to restorative resection of the rectum in an attempt to reduce the fragmentation of the tumor during the operation and to lessen the risk of implantation in the cut ends of the bowel.

Indications for Rectosigmoidectomy in the Treatment of Carcinoma of the Rectum

If the tumor is proliferating and is of a low grade of malignancy; if it is not deeply ulcerated; if it is possible to prolapse it outside the anus; if there is no evidence of extra-rectal spread, and if the tumor is too extensive for a local or diathermy excision then it may be removed by a rectosigmoidectomy.

Infrequently it happens that almost the same lymphatic field is removed by a rectosigmoidectomy as would be removed by a combined radical operation. But, this is most unusual and in the majority of cases it is unlikely that more than a few lymph glands will be removed by a rectosigmoidectomy even though a considerable length of the bowel is pulled down and excised.

Thus, while rectosigmoidectomy may be the operation of choice in certain 'A' and 'B' cases of carcinoma of the rectum, it is only indicated as the method of treatment in other cases which may already have lymphatic metastases and in which the tumor is larger, more deeply ulcerated, or of a higher degree of malignancy when it is essential or most desirable to avoid an extensive operation or to avoid a permanent colostomy. Such conditions may arise if the general condition is extremely bad; if the patient is very frail and has a poor expectation of life; if there is some other coexistent disease; if there are a few hepatic or peritoneal metastases; if a colostomy is absolutely refused, or if it would be unmanageable because of the poor mental condition. Rectosigmoidectomy is an operation that may be successfully performed on patients in very poor condition and with practically no postoperative reaction. The postoperatvie reaction is least in those patients in whom the peritoneum is not opened.

Even when a large, deeply ulcerated tumor prolapses quite easily through the anus the malignant cells have probably already spread to the mesorectal lymph glands at least, and the primary tumor should only be removed by a rectosigmoidectomy if the patient is incapable of withstanding a more major operation[2]. Otherwise, such a case is better treated by an abdominoanal resection of the Maunsell type[5] or by a combined radical operation.

Complications

Delayed primary or secondary hemorrhage:—This may follow any of the methods of local treatment of a carcinoma of the rectum, especially fulguration, and it may be controlled by the local application of adrenalin, thrombin, oxycel, gelatin foam, etc., or by fulguration.

Second carcinoma of the rectum:—This is always likely to develop in a patient who has had one carcinoma of the rectum successfully treated but in whom the rectum has not been removed. The factors responsible for the first tumor probably continue to act on the mucosa or on a prexisting benign tumor. The patient should therefore be kept under close observation for many years, particularly if there is a family history of polyposis.

Every effort should be made prior to performing a local excision of a carcinoma of the rectum to pass a sigmoidoscope beyond the tumor to ensure that there is not already an additional tumor, benign or malignant. Such a finding is fairly common. Gabriel[4] states that an additional carcinoma of the rectum or pelvic colon is to be expected in more than 5 per cent of cases, and Mayo and Schlicke[6] place the figure at 4.1 per cent. Complete sigmoidoscopic examination is imperative if blood is seen to be present in the bowel above the visible tumor, especially if the latter is covered with intact mucosa. If there is more than one tumor the lower one may be the result of submucus or retrograde venous spread from the other tumor (Dukes[7]), and it is then not a separate entity. If the sigmoidoscopic examination has not been satisfactory a barium enema examination should be carried out and, if negative, a further attempt should be made to examine the bowel to the full length of the sigmoidoscope after the local excision has been performed. If this is not done as a routine, a second tumor may be easily overlooked for quite a time. When discovered it will erroneously be considered to be a postoperative development; but, what is more important, the chance of its being confined to the bowel will then be much less and the prognosis will be so much the poorer. The presence of a second carcinoma, if recognized at the time of the original operation, does not appear so influence the ultimate outlook in patients treated by a radical operation.

Recurrence of the neoplasm or the development of metastases in the mesorectal lymph glands:—These possibilities provide good reasons for regular rectal examinations for an indefinite period after treating a carcinoma of the recutm by one of the local methods. It is unlikely that a nodule appearing in the rectal wall at the site of the original lesion is benign; and even if the first few biopsies fail to show any evidence of malignancy it is to be expected that such evidence will eventually be discovered.

The development of enlarged mesorectal lymph glands after the wound in the bowel has healed almost certainly indicates the presence of metastases, and a radical excision of the rectum and of the lymphatic field is then imperative. Likewise, a recurrence developing at the site of the primary tumor is also an urgent indication for a radical operation.

Stenosis:—Any of the methods of local resection of a carcinoma of the rectum may be followed by narrowing of the bowel, and dilation with or without proctotomy may be required.

Separation of the suture line:—Separation of part of the suture line quite often occurs, but, unless complete and following a rectosigmoidectomy it is usually of little importance. On rare occasions, however, even a small amount of separation may be followed by severe infection and stenosis.

Infection:—This may also occur if the bowel is inadvertently perforated by a transfixion or other suture or by the diathermy electrode. The latter accident is particularly liable to happen during fulguration of a tumor situated above the peritoneal reflection. The infection may be limited to the perirectal tissues or it may extend into the pelvic cellular tissues or to the peritoneum.

Anal fistulae:—These may result from perirectal infection following perforation of the bowel by a suture or by the diathermy electrode.

Persistent granulations:—Granulations often persist for a time at the suture line, but they eventually respond to the application of caustics or to diathermy cauterization.

Postoperative retention of urine:—This complication is mentioned as it is seen so often after any rectal operation, large or small.

Fecal Impaction:—This is a frequent complication during convalescence after a rectosigmoidectomy, especially if there is any narrowing of the lumen of the bowel, but it may also occur after local or diathermy excision of the rectal tumor.

Hemorrhoids:—If hemorhoids persist or appear after one of the local methods of treatment they are dealt with as required.

Complications Which Are More Liable to Develop After Rectosigmoidectomy

Frequent and precipitate bowel actions:—Even in the absence of fecal impaction (which may be the cause of a spurious diarrhea) the removal of the whole of the rectum and of a considerable length of the colon may be followed by frequent bowel actions which occur with little warning. Fortunately, this frequency and precipitancy is usually only temporary.

Vomiting and abdominal distention:—Following a rectosigmoidectomy these symptoms are usually indicative of a pelvic peritonitis.

Rectal prolapse:—If a rectal prolapse existed before the rectosigmoidectomy was performed and if the patient lives long enough the prolapse will probably recur in some 25 to 30 per cent of the patients.

Conclusions

Local excision and suture or diathermy excision should be employed if localized and low grade malignant changes have occurred in a pedunculated tumor which was previously benign, which is easily accessible from the anus, and which shows no evidence of extrarectal spread.

Rectosigmoidectomy is indicated if the tumor is small and proliferating not deeply ulcerated, of a low grade of malignancy, too large for local excision and suture or for diathermy excision, if it may be prolapsed through the anus, and if there is no evidence of extrarectal spread.

Local excision and suture, diathermy excision or rectosigmoidectomy is indicated in some of the patients with more sessile tumors even though these tumors are of a relatively high grade of malignancy if it is considered that the patients would be unable to withstand a more major operation, if because of some additional disease or because of hepatic or peritoneal metastases the patient has a very short expectation of life, if there would be considerable technical difficulties during a radical operation, if a colostomy is absolutely refused by the patient, or if the patient would be unable to manage the colostomy because of a poor mental state.

Acknowledgment

The above remarks are based mainly on the treatment of cases of carcinoma of the rectum observed at St. Mark's Hospital and at other hospitals and clinics in England and North America during the tenure of a Gordon Craig Travelling Scholarship of the

Royal Australasian College of Surgeons and partly on my own experience. My sincere thanks are especially due to the Staff of St. Mark's Hospital for their help and instruction during my term as Resident Surgical Officer.

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RECTOVAGINAL FISTULAE*

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Most rectovaginal fistulae are of obstetric or surgical etiology. Other causes are carcinoma of the cervix and irradiation.

Considering all the causes together, they are sufficiently frequent to demand considerable attention from the operating gynecologist or surgeon.

Fistulae between the rectum and vagina may be due to unsatisfactory healing after a third degree perineal repair. This most often occurs when a bridge of tissue or the sphincter heals completely in the anterior sphincter region while the repair above the sphincter breaks down. There results a low rectovaginal fistula.

Small and even moderate sized fistulae may result from injury to the rectum, notably if a suture has gone through into the rectum or if there is a hematoma with perineal infection.

Operations on perirectal abscesses or fistulae-in-ano may be followed by rectovaginal fistulae.

High rectovaginal fistulae may result from performing a total hysterectomy when injury to the rectum or sigmoid has taken place. High rectovaginal fistulae may result from irradiation of Cervical cancer.

Radium burns of normal tissue or the destruction of carcinomatous tissue have involved the rectovaginal septum producing a slough.

Small fistulae are entirely asymptomatic. Only slight leakage of gas or liquid movements escape into the vagina. They cause little annoyance and may not even be detected. When the fistula is slightly larger, the escape of gas may be the only complaint and there may be a slight fecal odor in the vaginal discharge. A large fistula is exceedingly distressing. Nearly all of the fecal contents may be evacuated through the vagina. The diagnosis of a rectovaginal fistula is comparatively simple. The possibility of complication must be borne in mind.

The opening in the vagina may be filled with feces or, if the bowel has been evacuated recently, the dark rectal mucosa may be seen at the fistulous opening in contrast with the pink vaginal mucous membrane.

It may be exceedingly difficult to locate the opening in the rectum or vagina when the fistula is very small. The location of both openings is essential to the cure.

A small flexible probe may be employed in conjunction with digital examination of the rectum to locate the fistula. If difficulty is experienced in following the fistulous tract at operation, injection with metheylene blue or boiled milk may aid the recognition of the nature and extent of the fistulous tract and its ramifications.

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The small fistulae resulting from rupture of an abscess is most apt to be troublesome. These postabscess fistulae may open between the anal sphincter fibers and cutting the fibers to lay open the fistulous tract is essential to a cure.

In one of our cases a rectovaginal fistula developed after infection in anal crypt. A fistula of this kind originated exactly as does a fistula-in-ano, except that an inflamed nodule or painful area recurs from time to time on the vaginal wall and finally ruptures into the vagina, discharging pus, gas and feces.

A fistula of this kind cannot be repaired until all infection has been eliminated.

Regardless of the type of operation to be done it is essential to reduce the colon bacillus content of the stool. For that purpose the patient is placed on a daily dose of 12 gm. of sulfasuxadine for five days preceding the operation. The patient is given a saline enema a few hours before operation. After postoperative nausea ceases, the sulfasuxadine treatment is resumed. Postoperative care is the same as that following repair of a third degree laceration.

Some fundamental principles in the surgical repair of all types of fistulae must be strictly adhered to in order to assure a high incidence of primary cure.

First, all scar tissue must be completely excised.

Second, the rectum must be restored to its normal length and the intestinal wall must be repaired in layers.

Repair of a small rectovaginal fistula:—We make a circular incision through the vaginal mucosa about the fistulous opening. Flaps of vaginal mucosa are dissected free for about 2 cm. from the margin of the fistulous opening. Scar tissue is excised. A purse-string suture of chromic #0 catgut is placed above the fistulous opening and is tied, inverting the fistulous opening. In placing the purse-string suture, care must be taken not to perforate the bowel mucosa. A second and third purse-string is placed and tied. The submucosal tissues are approximated with continuous chromic #0. The mucosa is closed with a continuous locked suture of chromic #0.

Repair of a larger rectovaginal fistula:—We dissect the vaginal mucous membrane back far enough to permit mobilization of the bowel for closure. Since the opening into the bowel is too large to be closed by purse-string suture, it is closed by a series of mattress sutures. The bites in the tissue are taken parallel to the edges of the fistula but care must be taken not to enter the lumen of the bowel. The mucosa is closed with continuous mattress suture which picks up the adjacent tissue thus obliterating dead space and inverting the mucosal edges. The posterior vaginal wall is repaired in the usual manner.

Postoperative care of rectovaginal fistula:—The simplest form of postoperative treatment is usually the best. The perineum heals best if it is kept free from any dressings and if it is kept dry. It is much easier to keep the perineum clean and dry if the patient lies on her abdomen most of the time instead of on her back. By this method, secretions from the vagina will not pass over the perineum. The taking of mineral oil by mouth or oil by rectal injections is to be condemned. Oil always predisposes to the recurrence of a fistula since it has a tendency to find its way along the suture line.

If the perineum becomes very painful, it is presumptive evidence of local infection. The application of hot moist packs is indicated. If pus discharges from the perineum, it is preferable to apply dry heat.

We do not use rectal tubes. The anal sphincter is dilated daily for the escape of gas for from ten days to two weeks. An attempt should be made to prevent any defecation for ten to twelve days.

NEWER HEMOSTATIC AGENTS

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The Mechanism of Blood Clotting

The mechanism of blood clotting is best expressed in the following diagram, after Seegers and Sharp[36] (Fig. 1).

Practically all the K-vitamins are napthoquinone derivatives. The liver requires K-vitamins to manufacture prothrombin. Prothrombin acts upon thromboplastin to produce thrombin. Thromboplastin is to be found in all the tissues of the body and in blood, chiefly in the platelets. Calcium is essential for this interaction. As illustrated in the diagram, heparin blocks this reaction. The second reaction demonstrates the clotting of fibrinogen to produce fibrin.

We need not discuss fibrinolysis, the inactivation of prothrombin with thrombin, fibrinolysin, or antithrombin. Reactions 3, 4, 5, 6, 7, 8 and 9 are rather complex, as is indeed the entire mechanism, and beyond the scope of this paper. For full details the reader is referred to the excellent work of W. H. Seegers[24,42].

Topical Hemostasis

Thrombin for topical application contains 5,000 units per ampule. This material is dissolved in 5 c.c. of saline. Instantaneous clotting results when this solution is mixed with blood.

If thrombin is placed on top of a thick layer of blood its action will be inefficient. The objective is to produce firm anchorage of the clot within the ends of the tiny capillaries. Thus, the thrombin must be applied quickly near the ends of the severed capillaries before a thick layer of blood forms. Free flowing blood must be wiped away and the area immediately flooded with the strong thrombin solution. A fibrin clot forms very quickly and plugs the tiny capillary openings. This will be effective, of course, only because capillary pressure is low and the capillary opening of narrow diameter. Later retraction of the clot further secures hemostasis.

If bleeding continues it is apparent that the operator is dealing with vessels of larger than capillary size, or the thrombin is of insufficient potency, or it has been incorrectly applied over a thick layer of blood, or the resulting clot has been imperfect, allowing a continuation of oozing from beneath.

Many of the deficiencies of thrombin application can be overcome by utilizing thrombin in conjunction with one of the new absorbable hemostatic agents such as fibrin foam, gelatin sponge or oxidized cellulose.

When used in this fashion the blood must be removed quickly by ordinary sponging, and the absorbable material, soaked with thrombin solution, is pressed firmly in place. Thus the operator provides mechanical obstruction by pressure, and forces the thrombin into the severed ends of the capillaries.

However, as will be shown later, clinical experience demonstrates that oxidized cellulose by itself is an effective hemostatic agent, and topical thrombin is unnecessary. Further, no hemostatic agent can replace meticulous surgical control of bleeding from larger vessels by means of clamp and ligature.

One caution must be advanced with regard to the use of thrombin. It must never be injected into blood vessels or into tissues.

The use of thrombin in proctology is now limited, due to the efficiency of oxidized cellulose by itself. If the operator desires to use thrombin in addition to oxidized cellulose, or in place of this preparation, it may be sprayed on the surface, or flooded on the bleeding area by means of a syringe and fine needle. Cronkite, Deaver and Lozner[9] sprayed thrombin in their cases of pilonidal cyst excision, and attempted primary closure. Healing resulted in thirteen days. The advantage of eliminating ligatures is obvious. However, the same objective can be achieved by the use of oxidized cellulose.

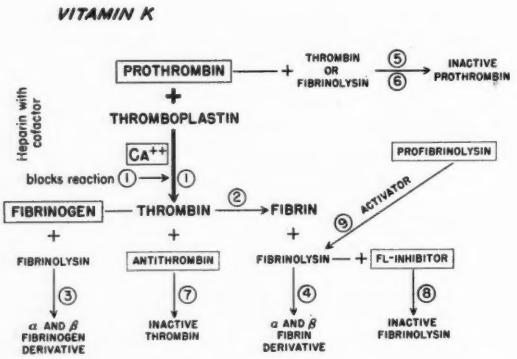

Fig. 1—Schematic diagram of factors involved in blood clotting (courtesy Walter H. Seegers, Ph. D., Wayne University College of Medicine).

Fibrin Foam

Human fibrin foam was developed by Bering[3, 4] and given extensive clinical trial by many other authors[2,5,15,16,17,46].

Dry fibrin foam is light, porous and slightly brittle. This material shrinks slightly when moistened with thrombin solution. It becomes wet and the pores fill quickly with thrombin. The wet sponge is then soft and pliable.

In its clinical application a thrombin-soaked sponge is placed on the bleeding surface and held in position for several minutes. Hemostasis is rapid and completely effective. The fibrin foam does not interfere with healing, and bactericidal agents may be combined with this material.

Fibrin foam soaked in thrombin is very effective in proctologic surgery. The only disadvantage is the complexity of the procedure, in preparation of the fibrin foam sponge, as compared with the simplicity of applying oxidized cellulose directly.

Gelatin Sponge

The gelatin sponge was developed by Correll and Wise[8] relatively soon after the introduction of fibrin foam. It is a light, porous material that can be cut into any shape or size. In contrast with fibrin foam which powders when crushed, the gelatin sponge can be handled roughly without disintegrating. Gelatin sponge implants do not encapsulate, and there is very little cellular reaction. Indeed, the gelatin sponge is rapidly absorbed in the presence of acute inflammatory reaction[18,20,21].

It is interesting to note[43] that gelatin increases the process of fibroplasia and produces more rapid, stable healing than in wounds not treated with gelatin.

The control of hemorrhage by gelatin sponge has been experimentally studied by Jenkins[19]. In this experimental study on dogs the gelatin sponge was used to control hemorrhage from wounds in the liver by the "blanket", the aorta by the "cuff" technic, and the vena cava and heart by the "patch" technic. The effectiveness of this hemostatic agent alone under such critical experimental conditions demonstrated its potential value in clinical surgery.

Thus, this author concludes that "the careful and judicious use of gelatin sponge should provide the surgeon with a useful technical method for controlling hemorrhage where ligature or sutures may not be adequate, feasible or desirable". This author further suggests that the gelatin sponge would provide a satisfactory pack for postoperative hemorrhage after hemorrhoidectomy. The report of Rosser[22] is further cited as evidence of the desirability of gelatin sponge as a hemostatic dressing in anorectal surgery.

The gelatin sponge may be employed clinically by first soaking in saline solution with or without thrombin, or by compressing it in the dry stage. Firm, even pressure must be applied over the sponge as soon as enough blood has escaped to saturate the sponge, and the pressure must be maintained until the blood clots in the sponge. While dry the gelatin sponge sticks to rubber gloves unless they are moistened just before applying the sponge. Perforated cellophane or Cilkloid is especially helpful in preventing the sponge from sticking to gloves. The cellophane or Cilkloid is then removed from the sponge by means of a saline soaked sponge. The saline penetrates the perforations, softens the sponge, and permits easy removal.

Careful surgical hemostasis in anorectal surgery is a primary requisite. The gelatin is therefore applied to a dry wound during routine surgery. The problem of tackiness is thus avoided.

Rosser[23] recommends completely burying gelatin sponges impregnated with thrombin solution in the surgical perianal wounds in treatment of pruritus ani. The sponges are hemostatic, non-irritating and remain *in situ* nearly thirty days. Inserted in a clean, subcutaneous field the gelatin foam does not incite infection. Healing is prompt and hospitalization short. Incisions are made in the perianal area, the perianal nerves are severed, and the gelatin foam sponges are inserted as a barrier to nerve regrowth.

The gelatin sponge is thus seen to be an effective hemostatic agent in proctologic surgery.

Oxidized Cellulose

The possibility of utilizing oxidized cellulose in surgery was suggested by Dr. Hans Clarke of Columbia University to Frantz[10-14] who subsequently reported the initial studies in 1943.

Oxidized cellulose had been prepared by Yackel and Kenyon[47] and Unruh and Kenyon[44], by oxidizing cotton and gauze with a mixture of nitrogen dioxide and trioxide. This process converted cellulose into cellulosic acid (polyanhydroglucuronic acid). The tissue absorbability of oxidized cellulose was found to vary with its carboxyl content. Indeed, the gauze and cotton was useless if the carboxyl content exceeded certain limits.

At the present time oxidized cotton and gauze are prepared by controlled exposure to nitrous oxide. The oxidized material has a carboxyl content of 25.56 per cent. The finished cotton and gauze are white to off-white in color, and will remain stable for one to three years. Standard Oxycel (Parke, Davis & Co.) will absorb six to seven grams of whole blood. Cellulose materials inactivate thrombin. If they are to be used together with thrombin solution the thrombin must be dissolved in sterile sodium bicarbonate solution (0.5 per cent). This avoids loss of thrombin activity. In the opinion of this author, however, the increased complexity of technic produced by the utilization of thrombin together with oxidized cellulose rules against the use of the combination in proctology. Indeed, oxidized cellulose by itself is sufficiently effective so that thrombin need not be added.

There is very little tissue reaction to oxidized cellulose implants. The fact that the processed cellulose dissolves readily in whole blood is its major advantage.

It should be noted that oxidized gauze packs even more readily into a bleeding wound than does ordinary gauze. Swelling of the oxidized gauze fills the irregular contours of the wounds, and the increased pressure of the swelling mass aids hemostasis. In contact with blood the oxidized gauze turns brown or brownish-black. In a previous paper I have described the utilization of this color change as an indicator for internal bleeding[6].

It would appear that the hemostatic action is due chiefly to this swelling of the gauze and its sticky texture when blood-soaked. This sticky, gelatinous mass apparently takes the place of the clot.

Inasmuch as the proctologist operates in an extremely vascular field careful hemostasis is essential to prevent excessive blood loss at the time of surgery, and to eliminate the possibility of postoperative blood loss. This is of especial importance if the proctologist proposes to perform his surgery in ambulatory fashion. Indeed, whether a proctologic patient is hospitalized or ambulatory, he must be given the benefit of adequate hemostasis during surgery.

The primary technic of surgery, of course, requires careful surgical hemostasis by clamp and ligature.

The technic of application of oxidized cellulose is exceedingly simple. The material is applied directly to the oozing surface. Pressure can be made over the oxidized cellu-

lose by means of a gauze tampon. Usually, however, pressure is not necessary, and the Oxycel is completely hemostatic by itself. Brisk bleeding is best corrected by clamp and ligature.

In intrarectal surgery a strip of the oxidized cellulose is placed directly into the anal canal. Thus it acts both as a pressure packing and as a direct hemostatic agent. Of course meticulous hemostasis has already been accomplished before the Oxycel is introduced. All bleeding points have been clamped and ligated. No oozing of blood is seen at the time of introduction of the oxidized cellulose. Thus the material does not turn brownish-black at this time. It will do so only in the presence of free blood.

As indicated above, this property of color change provides a diagnostic as well as a hemostatic value. Should free bleeding occur at any subsequent time the oxidized cellulose becomes brownish-black, and thus serves as an indicator of such internal bleeding.

In open pilonidal wounds oxidized cellulose provides an excellent postoperative dressing. It is spread over the inner surface of the wound and ordinary gauze is then packed on top of this lining. A pressure dressing thus applied immediately stops all minute capillary ooze. If the quadrant excision technic for pilonidal surgery is employed[7] the operator may pack oxidized cellulose into each quadrant as the excision proceeds. Thus, clamp and ligature hemostasis is reduced to an absolute minimum, and is often entirely unnecessary.

Oxidized cellulose is also especially valuable in the handling of oozing from tattoo-neurotomy wounds. In the procedure of tattoo-neurotomy for pruritus ani an extensive area of skin in the perianal region is undercut, and the oozing from the four incisions is sometimes extensive. When oxidized cellulose is applied directly to the incision areas the ooze is very rapidly controlled. It is necessary in this instance to make pressure over the oxidized cellulose with ordinary gauze sponges. The Oxycel remains in place as part of the dressing.

Clinical Report

We may here report one thousand cases of anorectal surgery in which Oxycel provided the postoperative dressing. These cases covered the entire range of ambulatory anorectal surgery, including fissure, anal ulcer, fistulectomies of all types, hemorrhoidectomy, anal prolapse and procidentia surgery, cryptitis and papillitis excision, the excision of benign tumors, tattoo-neurotomy for pruritus ani, and pilonidal cyst surgery. Oxycel provided the basic dressing, and was employed in direct contact with all wounds. A superimposed gauze pressure pack was applied in all cases. The completed dressing was held in place with adhesive strapping, holding the buttocks together.

It was found that within a period of twenty-four hours from the time of application of the oxidized cellulose the material became very soft and friable. Thus, whether used as a packing after hemorrhoidectomy or fistulectomy, the gauze can be left in place. It rapidly falls away from the wound within the first few days. However, the attempt is made to remove it within twenty-four hours after surgery. If oxidized gauze remains within the anal canal or elsewhere in anorectal wounds, it will not act as an

avenue of infection or as a source of irritation. Furthermore it facilitates hemostasis during the next day and is passed with the first bowel movement.

There have been no instances of postoperative hemorrhage in these cases. It must be emphasized once again, however, that the primary surgical technic involved careful hemostasis with clamp and ligature. In performing a hemorrhoidectomy for example the first step was the insertion of a hemostatic suture ligature through the base of the pile pedicle. This controlled bleeding from the major hemorrhoidal vessels. If an electrosurgical technic is employed it is advisable to undersew the proposed area of eschar. Usually this should be in the form of a running suture from the pile pedicle to the skin surface. Thus, when the eschar separates, it will be reinforced by the underlying suture, thus preventing blood loss at the time of such separation. If an open technic of hemorrhoidectomy is employed, without electrosurgical cauterization, ligation of each bleeding point becomes exceedingly important. These bleeding points are especially evident along the cut margins of mucosa and skin. Each is clamped with a mosquito clamp and carefully ligated with plain I catgut. It will thus be seen that meticulous surgical hemostasis is the primary prerequisite in anorectal surgery. Assuming this, however, the use of oxidized cellulose offers many advantages as an additional safeguard against postoperative bleeding.

Conclusions

The mechanism of blood clotting has been described in general terms. The application of various hemostatic agents in proctology is detailed. Thrombin, fibrin-foam, gelatin sponge, and oxidized cellulose are discussed.

The conclusion is reached that oxidized cellulose offers a simple, easily applied and very effective hemostatic agent for proctologic surgery. The use of this material in one thousand cases is reported.

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ATLAS OF PROCTOLOGIC SURGERY

The figures and legends that follow will be included in the "Atlas of Proctologic Surgical Technics". The final word has not yet been spoken in the technic of hemorrhoidal surgery. Indeed, there will always be room for modification and improvement.

The methods illustrated are representative of the current thinking in this field of surgery. Basic principles are considered in the selection of these illustrations for teaching purposes.

Fig. 1—After Blaisdell, Surg., Gynec. & Obst. 92:140-148, (Feb.), 1951.

A. The hemorrhoidal stump is tied after dissection. Note that excision is carried only to the emerging longitudinal muscle fibers. (Morgan technic).

B. Dissection is incorrectly carried through the longitudinal fibers to an excessively high level. The transitional zone is thus denuded.

C. Blaisdell technic, with no denudation of transitional area. The hemorrhoidal stump is tied *immediately* when the dissection reaches the sphincter fibers. This technic hastens healing.

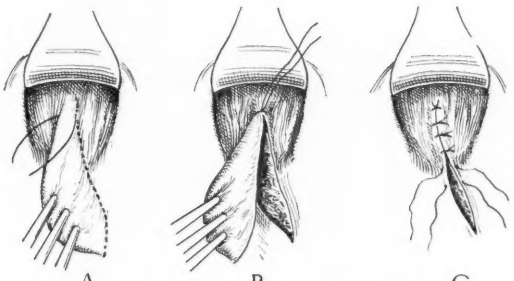

Fig. 1 (should be on p. 147)

Fig. 2—After Blaisdell, Surg., Gynec. & Obst. 92:140-148, (Feb.), 1951.

This illustrates the technic of tying the hemorrhoidal stump *immediately* upon encountering external sphincter fibers. The suture is carried to the site of the first suture of the operation at the upper mucosal limit of the internal hemorrhoid.

The inset illustration illustrates the Morgan principle, carrying dissection above the external sphincter fibers to the terminal fibers of the longitudinal muscle coat. At this point these longitudinal muscle coat fibers penetrate the intermuscular septum.

1. External sphincter ani.
2. Terminal fibers and longitudinal muscle coat.

Fig. 3—After Blaisdell, Surg., Gynec. & Obst. 92:140-148, (Feb.), 1951.

The wound edges are "cloverized" well out on to the skin. The finger tip is pressed outward from within to provide adequate exposure. This procedure must be repeated after removal of the ring retractor to prevent tag formation.

Technic:—This technic is designed to remove hemorrhoids with the preservation of 3 intervening normal islands of tissue. The ring retractor is said to provide excellent exposure. The combined use of the Sims speculum and the ring offers even better exposure.

A continuous fine silk suture, placed just outside the external hemorrhoidal tissue, engages the ring and produces traction. A fluffed gauze sponge is placed between the retractor and the buttocks.

The forefinger is then gently placed within the anus, and a Sims speculum may be employed for further retraction.

The upper limit of each internal hemorrhoid is noted as an abrupt transition of normal grayish anal mucosa to the abnormal red hemorrhoidal surface.

This point is grasped by an Allis forceps and a suture ligature is placed.

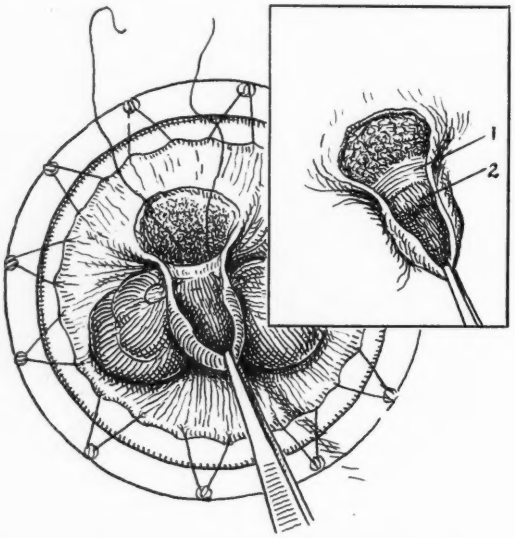

Fig. 2

Dissection is begun in each lateral hemorrhoidal sulcus, the two incisions being joined around the skin border of the hemorrhoid.

This skin border end of the hemorrhoid is then raised as a flap. It is most important that dissection be confined to the area within the lateral hemorrhoidal margins, preserving as much normal tissue as possible.

It will be noted that in the Morgan technic dissection is carried inward until the longitudinal muscle fibers are bared at their point of emergence through the intermuscular septum. This denudes the subcutaneous portion of the external sphincter.

The Blaisdell technic ends dissection before this point, when the external sphincter fibers are first seen.

Thus, the hemorrhoidal flap is dissected inward only until "the very first glimpse of the subcutaneous portion of the sphincter muscle".

A mattress or purse string suture is then placed through the flap from the point of the previously placed initial suture to the tissue last exposed by dissection. The hemorrhoidal flap is cut off to leave a ½ inch stump.

The Blaisdell technic thus differs from the conventional Morgan method as follows:

1. Hemorrhoidal dissection ends at the outer border of the subcutaneous portion of the external sphincter.
2. A mattress or purse string suture on the hemorrhoidal flap obliterates dead space and provides added security for the stump.
3. Hemorrhoidal ring and Sims retractor are employed for retraction. (After Hullsick, and later Helfrick).

Fig. 4—After H. E. Bacon, Anus-Rectum-Sigmoid Colon, Lippincott, Volume I

A. a. This illustrates traction dissection. Each pile mass is grasped by a curved Rankin hemostat. The hemorrhoid is brought into view by applying additional hemostats, holding these together with a rubber band.

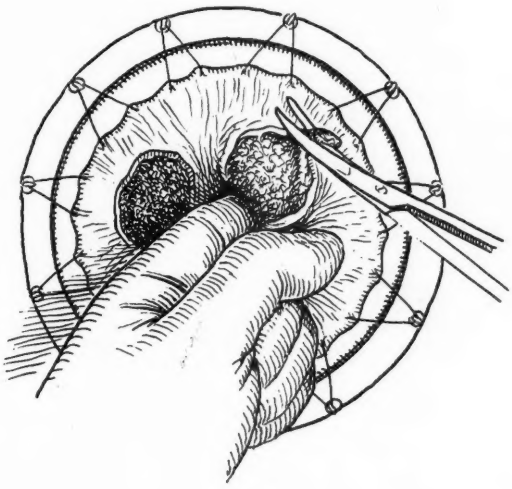

Fig. 3

Note that in Figures b. and c. the adjacent skin is preserved to prevent stenosis. Figure c. illustrates the empty hemorrhoidal bed after dissection.

B. The hemorrhoidal vein has been dissected away from the surface of the external sphincter muscle. When the inner edge of the muscle is reached a small right angle retractor is placed and the muscle is drawn gently outward.

C. This is done to prevent inclusion of the sphincter in the clamp or suture.

Fig. 5—After H. E. Bacon, Anus-Rectum-Sigmoid Colon, Lippincott, Volume I

A. An elliptic incision is made at the lateral margin of the hemorrhoid, beginning at the pectinate line and extending outward ½ inch beyond or distal to the tip of the external pile mass.

B. Elevate the incised skin with tissue forceps and separate from the underlying tissue with blunt tipped, curved scissors. Do the same on the opposite side. Join the two incisions at the apex and begin blunt dissection at this point.

Fig. 6—After H. E. Bacon, Anus-Rectum-Sigmoid Colon, Lippincott, Volume I

This illustrates placement of a Buie-Smith hemorrhoidal clamp on the internal hemorrhoidal mass in the longitudinal axis of the bowel. The hemorrhoidal mass is then cut away.

Fig. 7—After H. E. Bacon, Anus-Rectum-Sigmoid Colon, Lippincott, Volume I

A number 0 chromic cat-gut suture on a small curved needle is now placed ¼ inch from the tip of the clamp and tied.

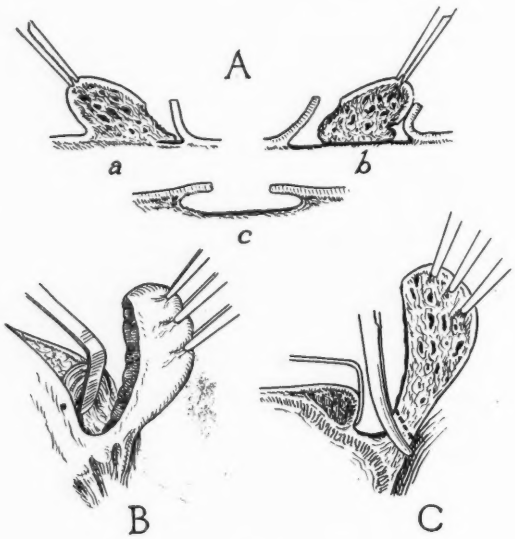

Fig. 4

The base of the hemorrhoid is then sutured beneath the clamp from side to side until the edges of the mucus membrane are approximated. The clamp is removed and the suture tied at a point corresponding to the anorectal line.

Fig. 8—Earle's opereation (after Bickham). The technic was originally devised by Mitchell. The hemorrhoid is pulled down by hemostats and clamped at its base. The clamp is placed in the long axis of the bowel.

A cat-gut suture is then inserted at the highest internal level of the hemorrhoidal mass, just beneath the tip of the clamp. This suture is tied. The pile mass above the clamp is now excised.

Fig. 9—The original suture is now continued as a running suture, over the clamp. This suture is placed loosely so that the clamp may be withdrawn easily.

When the clamp is withdrawn the suture is drawn tight and completed by a running knot.

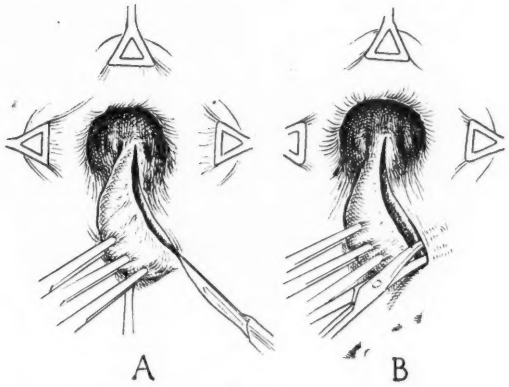

Fig. 5

Fig. 10—The Cantor technic, employing the thermal cutting unit. (Ambulatory Proctology, 2nd Edition—Hoeber).

A. Retraction is by means of Allis clamps placed at the verge margin. These clamps grasp the external hemorrhoidal tissue, if present. Each pile mass is

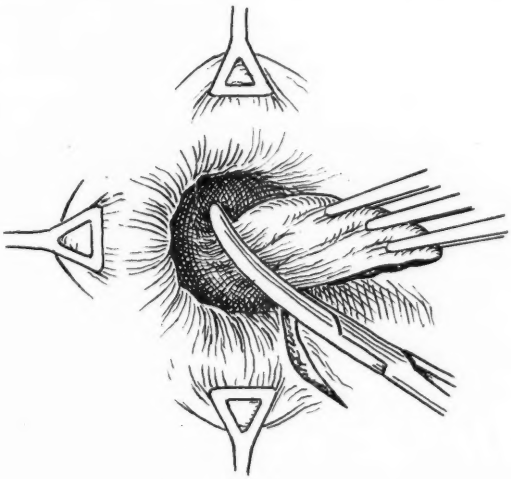

Fig. 6

carefully dissected inward, using the thermal cutting knife exactly as if it were a scalpel. Tissues must be kept under tension while incising with this knife.

Note that a suture ligature of chromic I cat-gut has been placed in the pile pedicle.

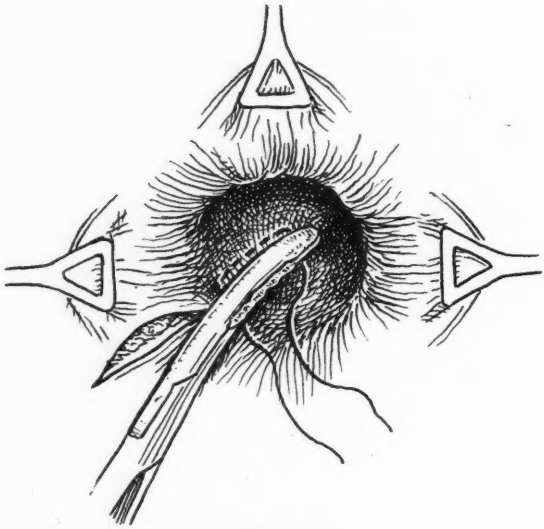

Fig. 7

A Mixter clamp grasps the hemorrhoidal mass and is used for retraction together with the Allis clamp as the dissection proceeds. Dissection is carried inward to the inner level of the external subcutaneous sphincter ani.

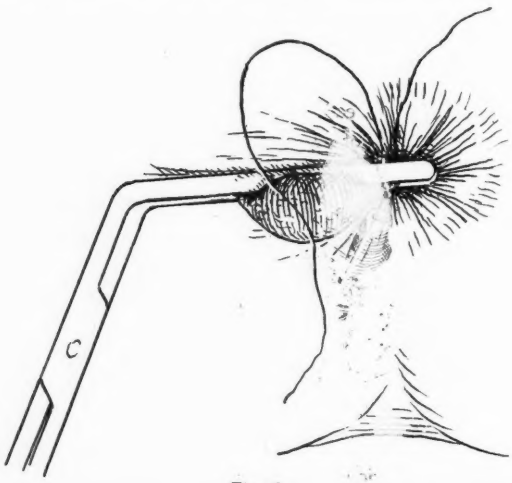

Fig. 8

B. The stump has now been tied and the hemorrhoidal mass is being excised. Each hemorrhoid is treated in the same fashion.

Fig. 11—This illustrates the clamp and cautery method. (After H. E. Bacon, C. F. Martin clamp). The hemorrhoidal mass has been drawn outside the anus and a heavy cautery clamp is applied.

A portion of the hemorrhoid is then excised by scissors.

Fig. 12—Wet gauze is placed around and beneath the clamp to protect the adjacent tissue. The hemorrhoidal stump is well seared with a hot Paquelin cautery. The clamp is then removed from the charred stump.

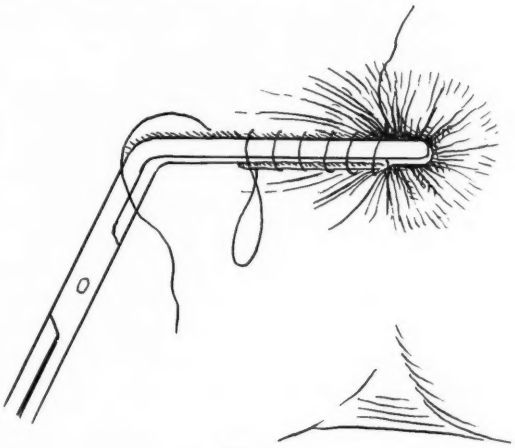

Fig. 9

If there are external hemorrhoids a V-shaped incision is made around the base of each external hemorrhoid to the anorectal line on each side. A Kocher, Kelly or Mixter clamp is then applied on the main body of the internal hemorrhoid, and it is drawn outward, together with the dissected external hemorrhoidal mass. The cautery clamp is then applied and surgery proceeds as above described. (See also Ambulatory Proctology, P. 508 for another type of cautery clamp).

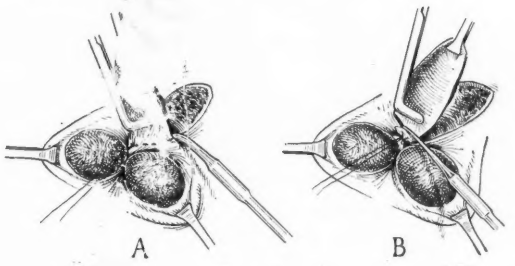

Fig. 10

Fig. 13—Technic of ligation, excision and suture (Note single valve retractor).

A. The hemorrhoidal mass is grasped by several clamps and drawn outward. A suture ligature is now placed in the pile pedicle.

B. Elliptic incision is made along the lateral margins of the hemorrhoidal mass, and the tissue dissected to the pedicle.

C. Interrupted or continued sutures are now placed in the mucosa, to the anorectal line. The skin is not sutured.

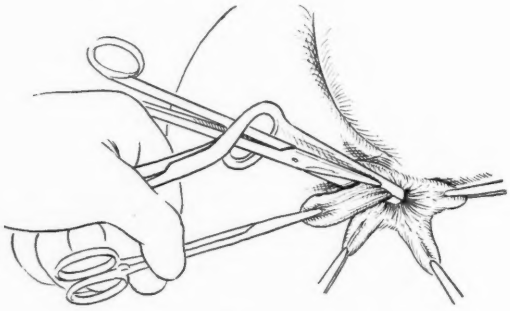

Fig. 11

Commentary On Hemorrhoidal Technics (*A. J. Cantor*):—The operator should use whichever technic he finds simplest for himself. The purpose of a hemorrhoidectomy is to excise hemorrhoidal veins. Individual modifications are of little consequence as long as the dissection is adequate, the sphincter remains intact, hemostasis is complete, and the area of excision is neither too great nor too small.

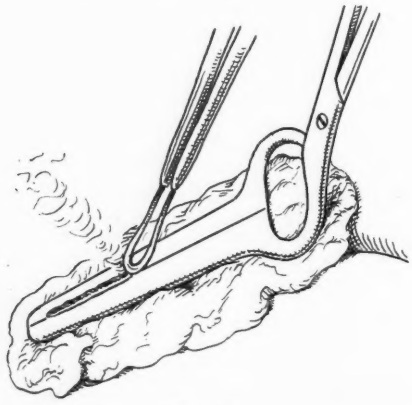

Fig. 12

I prefer to avoid the clamp and cautery technic inasmuch as it is relatively blind surgery. However, if the external hemorrhoidal mass is dissected to the level of the external sphincter, exposing this sphincter, the clamp may then be applied with relative safety. My preference would be to place a suture ligature in the pile pedicle, at the innermost tip of the clamp, and tie the residual stump before removing the clamp. This would prevent secondary bleeding after sloughing of the charred hemorrhoidal mass. A running suture may be employed instead of a tie.

It makes little difference, in my opinion, whether the dissection is carried only to the outermost border of the external sphincter, or exposes the sphincter completely. Indeed, there seems to be no particular point in retracting the external sphincter ani, as in the Bacon technic. If the sphincter is exposed, by carefully dissecting the hemorrhoidal mass from its surface, it will not be damaged. A clamp can then be applied safely, as in the Bacon technic, or for the clamp and cautery procedure.

In my own technic, after dissection of the hemorrhoidal mass, no clamp is applied. The hemorrhoidal mass is simply ligated and excised above the ligature. I do not find the clamp necessary, and believe that the number of surgical steps should be kept to a minimum.

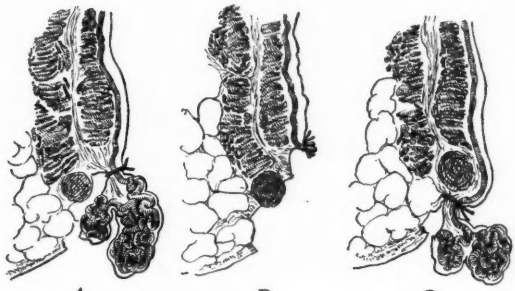

Fig. 13 (should be on p. 139)

Thus, the essential surgical technic in a hemorrhoidectomy is as follows:

1. Expose the hemorrhoidal mass by applying a clamp and drawing outward. The clamp may be Allis, Pennington, Mixter or any other type.
2. Dissect the veins away from the adjacent and subjacent normal tissue.
3. Carry this dissection to or above the external sphincter.
4. Place a suture in the pile pedicle and tie off or clamp off the basal hemorrhoidal tissue. Excise this tissue.
5. Approximate the mucosa, but not the skin, or leave the wound open. (The latter is the author's preference.)

EDITORIAL

Continued Progress

A major function of the International Academy of Proctology is the development of existing and new talent in proctology. The Academy is proud of its progress in this direction.

Dr. Paul Lahvis, Buffalo, New York, presented the following concepts for further consideration at the last Annual Meeting of the Academy in Atlantic City, N. J.

"Because the discussion of the establishment of foreign chapters at yesterday's meeting did not come to a decision about the policy which the Academy should pursue, I submit the following concepts which may be useful as a basis for further consideration.

"1. The Academy was founded on a platform which was intended to be International in scope. It welcomes as members those qualified in proctology irrespective of race and creed.

"2. American medicine today is leading the world. The one organization which successfully penetrates national barriers and establishes a functioning international body will reap credits and the consideration such leadership implies.

"3. There are no reasons against the establishment of such International Chapters which good will and determination cannot overcome. Present contacts between our members and men in foreign countries exist. The objections appear to be of a technical nature and pertaining mostly to the difficulty of transfering of foreign funds for dues and subscriptions. The actual cost of additional members to the Academy is negligible because the present membership carries the overhead and no serious loss is expected if the financial return from foreign sources is slow.

"These conditions can be eliminated in one of various ways:

"A. The restrictions on export of foreign currency to the U. S. are easing up at present. The indication is that the trend will continue.

"B. The method of using foreign currency and obtaining dollar balance in this country is available for instance in tourist transactions. There are other similarly satisfactory methods.

"C. If some cash funds are needed for the subscription cost of the Journal—in order to satisfy U. S. postal regulations—the system of sponsoring subscriptions would be at least a good temporary expedient.

"It seems advisable, therefore, for this Academy to seriously consider its potential as ambassador of good-will of the American medical leadership, and at the same time proceed with the execution of the high principles of its founding leaders. This problem deserves high priority at our present meeting and an effort should be made to reach an agreement."

Under the guidance of Dr. Lahvis, Dr. Otto Weiss, Mattoon, Ill. and Dr. Edward J. Krol, Chicago, Ill., foreign Chapters are now in process of formation. Dr. Juan Nasio, Rosario, Argentina, is guiding the development of a South American Chapter, and reports favorable progress in that direction.

Under the leadership of Dr. Caesar Portes an Illinois Chapter of the International Academy of Proctology has been formed, and will have four meetings annually. At the last meeting, shortly after the Annual Atlantic City International meeting, unanimous support for sponsorship for foreign members was reported by the Illinois chapter.

The International Board of Proctology has been activated under the sponsorship of the International Academy of Proctology, and applications and a booklet of information will be published in the very near future. It must be emphasized that this Board is not an integral part of the Academy. Fellowship in the Academy is not essential for application to the International Board of Proctology for Examination and Certification. It is desirable, of course, that all applicants be affiliated with at least one active proctologic organization.

The Academy is proud to sponsor the International Board of Proctology, the first international board of its kind. Another major international organization that has expressed its opinion on the International Board of Proctology is the World Medical Association. Through its International Secretary General, Dr. Louis H. Bauer, President-elect of the American Medical Association, a favorable opinion has been advanced (see editorial in the last issue of THE AMERICAN JOURNAL OF PROCTOLOGY). There is no doubt that the formation and activation of the Board is one of the greatest steps forward in the history of the development of proctology.

It must be emphasized that certification by this Board will be even more difficult than certification by the American Boards. The significance of such certification will be evident upon study of the proposed booklet of information, which will be available soon. There will be no "political" certifications by this Board and no "automatic" certifications. Certification by the International Board of Proctology will be the distinguished hallmark of proctologic ability. This certification will be honored throughout the world.

Dr. John Joseph Lorentz of Methuen, Mass. has proposed additional projects for the Academy. He envisions the following:

"1. *Pathology*:—The gradual accumulation, at autopsy and the pathology surgical table, of both the usual and the unusual types of disease processes involving the anus, rectum and colon. Colored photographs to be made of gross specimens, and slides and microphotos of the latter. Typical tissues to be made up in sets of 12 or more slides for future use in Board examinations, or for use by Academy members wishing to study pathology. Perhaps a museum of gross specimens, and the future development of an Atlas of Proctologic Pathology might be in order.

"2. *X-Ray*:—The development of a library of interesting and instructive X-Ray plates. These might well be photographed on lantern slides for the above purpose.

"3. *Prize*:—The establishment of an annual prize to be awarded a fourth year student in Medical School for a paper, the paper to be published in the Journal, and the topics to range from Biographical and Historical studies to worthwhile themes on the application of the basic sciences to proctology. Suitable prizes, such as a set of Bacon, a set of the New Surgical Atlas, the Journal for three or five years, etc.

"4. *Committee on Education*:—The establishment of a committee to organize and direct the development of methods, aims and purposes for the advancement of proctologic education, both for Academy members, and the young physician entering the world of practice. Some such ideas as the following may be a starting point.

"a. *Visual auditory*:—slides, film.

"b. *Library*:—photostating or microfilming of articles from the periodicals.

"c. *Pathology*:—slides, gross, photomicroscopy.
Atlas of Pathology.

"d. *Anatomy*:—gross dissections, photos of same, an Atlas.

"e. *Technic*:—Atlas.

"f. *Pharamaclogy*:—standardization of drugs.

"g. *Nomenclature*:—standardization of terms.

"h. *Teaching Program*:—direct same as applied to future Chapters.

"i. *Basic Sciences*:—stimulate interest, and study of same."

Under the guidance of Dr. Edgar Scott, Birmingham, Alabama, a teaching film library has already been established. This type of visual instruction will be a prominent, full day feature of the next Annual Meeting of the Academy.

These are but a few of the plans for the coming year. The activation, development and completion of these projects, will be fully reported at the next Annual Meeting in Chicago. The rapid growth of the Academy in membership as well as in scope is a point of pride for each Academy Member, Associate Fellow and Fellow.

ALFRED J. CANTOR

ABSTRACTS FOR PROCTOLOGISTS

RECTAL WASHINGS, TECHNIC FOR CYTOLOGIC STUDY OF RECTOSIGMOID. A Preliminary Report. Roland A. Loeb and Joseph Scapier. Am. J. Surg. 81:298-302 (March), 1951.

The authors describe a simple but effective method of obtaining rectal washings from a given localized area for cytologic study. This instrument consists of a double lumened brass tube 11½ inches in length constructed by soldering together two tubes with an ⅛ inch inside diameter. The tip of one tube is set back ¼ inch. Both tube tips are highly polished to obviate trauma to the mucosa. The shorter tube carries the normal saline solution, while the longer tube is utilized to aspirate the specimen. The ends of these two brass tubes nearest the operator are spread apart and to each is attached a short length of rubber tubing. This tubing in turn is connected to a glass "elbow" tube that passes through a two way rubber stopper that plugs a 20 c.c. glass test tube. A short glass "elbow" is also placed through the second hole in the rubber stopper. An atomizer bulb is attached to the short elbow on the normal saline side, while a small suction pump is fastened to the other short glass "elbow" on the aspiration side of this apparatus. Ten c.c. of N saline is placed in the test tube on the irrigating side of this instrument.

In practice the rectal washing is performed in conjunction with the sigmoidoscopic examination. The sigmoidoscope locates the area from which it is desired to obtain cells for cytologic study. The instrument is passed through the sigmoidoscope and the forward tip is placed on the suspicious area. By squeezing the rubber atomizer bulb a stream of saline is directed on to the mucosa and is immediately aspirated into the collecting tube. The apparatus is now withdrawn from the sigmoidoscope and the material is immediately fixed, processed and stained by the Papanicolaou method. This method has been used in 120 patients with known condiitons and has been most satisfactory.

DONALD C. COLLINS

HIRSCHSPRUNG'S DISEASE. New Surgical Treatment. Orvar Swenson, Richard H. Segnitz and Robert H. Shedd. Am. J. Surg. 81:341-347 (March), 1951.

The authors describe their experiences in 69 patients with Hirschsprung's Disease. Sixty-seven satisfactory final results were obtained by their method of treatment. The basic factor is an aganglionic segment of distal large bowel which, lacking peristalsis, obstructs the normal evacuation of feces and gas. After four weeks of suitable preoperative preparation at home, the operation of rectosigmoid resection, as perfected by Swenson in 1948, is performed. An area 12 cm. proximal to the point of narrowing is selected for the line of resection. This level of resection is checked by immediate frozen sections to be certain that normal ganglion cells are present. If none are found additional bowel is resected until normal ganglion cells are demonstrated. The remaining colon must be of sufficient length to permit for pulling through the anus and anastomosing 2.5 cm. from the anal margin below without tension. Division of the sigmoidal and, if necessary the left colic, vessels near their origin eliminates this limiting factor without producing vascular impairment. Two separate operating teams are recommended to perform both the intraabdominal and perineal surgery at the same time to effect a marked saving in operating time. Dissection of the rectum is performed atraumatically, staying close to the bowel to avoid damage to any pelvic structures, and is carried down to the levators, leaving the sphincter mechanism intact. Some of these patients have been followed-up for as long as three years. The results have been gratifying, with follow-up barium enemata showing return of the dilated bowel to normal calibre and complete emptying. Spontaneous daily bowel movements, gain in weight and improvement in health have resulted in every case.

DONALD C. COLLINS

CONGENITAL MALFORMATIONS OF THE RECTUM AND ANUS. With Special Reference to the Treament of Associated Fistulae. Ernest E. Arnheim. Am. J. Surg. 81:538-547 (May), 1951.

The author reports upon his experiences in treating eighteen cases of congenital malformations of the rectum and anus, all of type III (Ladd and Gross). Three deaths (16.6 per cent mortality) were due to other associated congenital defects. Fourteen patients were cured. Eleven instances of atresias of the rectum and anus with associated fistulae are recorded. The types of fistulae, the operative procedures and the results are indicated in chart form. One of these patients remained uncured. There were no deaths in this group of cases.

DONALD C. COLLINS

COMBINED ABDOMINOPERINEAL RESECTION FOR CARCINOMA OF THE RECTUM. Mell B. Welborn. Am. J. Surg. 81:548-551 (May), 1951.

This report deals with twenty-five cases in which the surgeon was able successfully to perform a single stage combined abdominoperineal resection for carcinoma of the rectum. Twenty-

one of these patients remain alive, well and free of disease. One person died two months postoperatively from widespread metastatic disease. There was one hospital death on the ninth postoperative day from a coronary occlusion, making a mortality of four per cent. The remaining two patients died six and eight months respectively of unrelated conditions. The first patient operated upon on December 9, 1943, remains well and free from disease.

DONALD C. COLLINS

COLORECTAL POLYPECTOMY. Samuel S. Pasachoff. Am. J. Surg. 81: 552-553 (May), 1951.

Because it is better to have an entire colorectal polyp for pathologic study, the author presents his method of polypectomy. The sigmoidoscope is passed to the polyp site. A No. 11 Michel skin clip, already threaded and tied to a length of black silk, is grasped in the open jaws of a biopsy punch and introduced through the sigmoidoscope. The biopsy punch when it encounters the polyp is then closed to engage the teeth of the Michel skin clip into the fundus of the polyp. The biopsy punch is then opened and removed from the sigmoidoscope. The loop of a wire snare is then threaded onto the free end of the black silk thread, introduced through the sigmoidoscope, and around the polyp and down to its base. The black silk thread upon tension exposes all surfaces of the polyp without interfering with the manipulation of the snare under direct vision. The snare is then closed about the pedicle of the polyp and cuts through it by crushing. The silk thread with its attached Michel skin clip in the fundus of the polyp is withdrawn through the proctoscope and placed intact in a suitable preservative immediately for pathologic study. The wire snare and proctosigmoidoscope are then withdrawn, after the base of the polyp is further fulgurated as indicated.

DONALD C. COLLINS

STEREOSCOPIC RADIOGRAPHY IN THE DIAGNOSIS OF ANORECTAL FISTULA. Louis J. Hirschman. Am. J. Surg. 82:83-85 (July), 1951.

The use of stereoscopic radiography after the injection of opaque paste into a so-called "simple" anorectal fistula commonly reveals the presence of side tracts and branches that are never discovered by the probe type of examination. Failure to eradicate these accessory tracts results in recurrences and unnecessary multiple operations and needlessly prolonged surgical treatment. The patient is prepared before radiographic study by warm enemata containing sodium bicarbonate or sodium chloride in weak solution. A bismuth paste is recommended consisting of one part of bismuth subnitrate to two parts of yellow petrolatum. This paste is heated to 110° F. and injected by a glass sinus syringe into the fistula. Careful inspection will usually show the exact location of the internal opening of the fistulous tract, and the paste will be seen emerging through a posterior diseased anal crypt. This paste has a brilliant yellow color that is advantageous. It is necessary to wipe away the excess of paste before making the x-ray films. Particular care must be used to be sure that the rectum, vagina, and skin surfaces are free from excess paste. This paste has the facility of remaining in situ and not running out as is the custom of oily liquids commonly used that possess radioopaque qualities.

DONALD C. COLLINS

POLYPS OF THE LARGE BOWEL AND THEIR MANAGEMENT. Raymond W. McNealy, and Francis D. Wolfe. Ill. M. J. pp. 260-262 (May), 1951.

Polyps are found in more than 10 per cent of patients past middle life, and they vary greatly in size.

The symptoms of polyps are as varied as their causes and size. Where polyps are numerous or of considerable size, bleeding is common. Large polyps with pedicles may be so irritating as to cause peristalsis. This tends to elongate the pedicle of the polyp and may cause intussusception.

A progressive anemia may be the first symptom of a bleeding polyp. Polyps located beyond the transverse colon generally cause frank blood in the stool. In polyps located above the rectal area, the blood may be mixed with the stool. In the rectum or pelvic sigmoid the stools are coated with streaks of bright red blood.

Polyps may give rise to cramps and other intestinal disorders; causing one to believe that colitis or spastic bowel is present.

If surgery seems inevitable, the patient should receive careful preoperative attention.

NORMAN ALBERT

PRE- AND POSTOPERATIVE CARE IN ANORECTAL SURGERY. Lester J. Johnson and Frederick W. Schilla. Am. J. Surg. 81:33-41, (Jan.), 1951.

An excellent general discussion is presented on methods proven by time to greatly increase

the patient's comfort, lessen the attendant risks, and improve the final results in anorectal surgery; both during the pre- and postoperative periods.

DONALD C. COLLINS

POSITIONAL ANOMALIES OF THE LARGE INTESTINE: THEIR CLINICAL SIGNIFICANCE. W. Sheinfeld. J. Internat. Coll. Surgeons 14:608-612, (Nov.), 1950.

Sheinfeld reports two cases, one of hindgut malposition complicating a cecal carcinoma, and another of left-sided position of the cecum and appendix, and describes the surgical difficulties caused by them. He also comments on the development of the intestinal tract.

HAROLD NEIFELD

RESTITUTION OF RECTAL CONTINENCE AFTER RADICAL OPERATION FOR CARCINOMA OF THE COLON AND RECTUM. H. Finsterer. J. Internat. Coll. Surgeons 14:635-652, (Dec.), 1950.

In carcinoma of the right side of the colon, a one-stage anastomosis is always done (except when acute obstruction is present), and is possible for carcinoma of the left side if the bowel has been sufficiently decompressed. In rare instances, an excluded loop of ileum can be interposed between the proximal colon and the rectum. In rectal carcinoma preservation of the sphincter is possible only if the growth is 6 cm. or more from the sphincter. In carcinoma near the sphincter, a subcutaneous abdominal colostomy should be done, so that the bowel which lies between the skin and the rectus sheath can be compressed by a belt to control the bowel contents.

HAROLD NEIFELD

IRRITABLE COLON. George T. Harding. Am. J. Surg. 81:55-59, (Jan.), 1951.

An excellent review is presented upon this subject, mentioning the latest advances in therapy. A plea is made for an adequate understanding of the psychophysiologic processes involved in the colopathic patient. The successful proctologist of the future will be that physician who includes in his diagnosis and treatment of the patient an estimation of the constitutional makeup of the patient and an evaluation of his struggle with and his adjustment to his environment.

DONALD C. COLLINS

USE OF SLIDING GRAFTS IN THE TREATMENT OF ANAL FISSURES. Howard K. Belnap. Am. J. Surg. 81:63-66, (Jan.), 1951.

In a series of 110 consecutive cases of patients with anal fissure treated by means of sliding grafts, there were no recurrences at the Thomas D. Dee Memorial Hospital, Ogden, Utah. Uniformly good results were obtained. This procedure proved especially beneficial in fissures resulting from postoperative anal wounds. Very little postoperative discomfort occurred.

DONALD C. COLLINS

RADICAL RESECTION OF THE LEFT SIDE OF THE COLON. J. W. Howser. J. Internat. Coll. Surgeons 14:731-733, (Dec.), 1950.

The five year survival rate for carcinoma is higher for right-sided than for left-sided resection, due (because of the circulatory pattern of the left side of the colon) to resecting a segment of colon with very little adjacent mesentery and bowel. Lesions of any part of the left side of the colon require complete extirpation of all bowel supplied by the inferior mesenteric artery together with all the mesentery below the middle colic artery.

HAROLD NEIFELD

CHRONIC ULCERATIVE COLITIS. W. B. Swigert. J. Internat. Coll. Surgeons 14:714-720, (Dec.), 1950.

The causes of chronic ulcerative colitis are: infective (B. Coli, Necrophorus, Dysentery, Tuberculosis, Streptococci, ameba), allergic, nutritional and neurogenic. The complications are: perforation, scarring, stricture, malignant change, thrombosis, polyposis and fistulae. These patients should be put on a bland, nonirritating, low residue diet (high in proteins, vitamins and minerals, and restricted in starches and sugars), be given blood parenterally, duodenal and gastric extracts, vaccines, psychotherapy, and atropine and allied drugs with sedatives, sulfasuccidine and antibiotics, paregoric, nisulfazole and ACTH. The surgical treatment falls into four categories: ileostomy, ileostomy and complete colectomy, colectomy with anastomosis of the ileum to the remaining colon or rectum, or vagotmy.

HAROLD NEIFELD

SODIUM PENTOTHAL WITH CAUDAL ANESTHESIA IN ANORECTAL SURGERY. Stewart R. Jones. Am. J. Surg. 81:78-80, (Jan.), 1951.

Intravenous sodium pentothal® combined with caudal anesthesia is most acceptable to the patient. The procedure is simple and relaxation adequate. Incidence of urinary retention is decreased as are the dosages of opiates. Postoperative complications which could be attributed to anesthesia were not encountered in a series of 148 operations performed under this type of anesthesia. Most important, post-spinal headache was eliminated without adding immediate or delayed anesthetic risks.

DONALD C. COLLINS

ANORECTOVAGINAL FISTULA. Donald Grillo. Am. J. Surg. 81:96-97, (Jan.), 1951.

A case-report is made concerning a white female, aged thirty-three years, who had an anal infection that produced an anorectovaginal fistula. This condition was cured by a fistulotomy and repair of the rectovaginal fistula by use of the "flap operation" in one stage.

DONALD C. COLLINS

BOOK REVIEWS FOR PROCTOLOGISTS

BRAIN AND BEHAVIOUR—N. E. Ischlondsky, M. D. New York. 182 pages. 46 illustrations. The C. V. Mosby Company, St. Louis, Mo., 1949. Price $7.00.

This very remarkable volume offers a theory of induction and experimental data to support this theory, in explanation of the fundamental material of Pavlov, Hering and Sherrington.

It is the opinion of the author that the phenomenon of electrical induction in the coils of an inductorium is closely parallelled by a similar mechanism in the brain. This mechanism offers a simple explanation for many neuropsychic occurrences of normal and abnormal nature.

The explanation of the paradoxical and ultraparadoxical reactions of Pavlov on the basis of the induction theory is very interesting. The author's investigation and experiments would seem to provide a fundamental background upon which to base his theory.

This book is basic for all physicians who wish to understand human behavior. The proctologist will find nothing relating to the rectum or colon specifically. However, books of this nature should be studied by all physicians who are interested in the patient as a whole.

The present trend toward psychosomatic medicine should include the proctologist. This book is well printed, well organized, well illustrated, and well bound. It provides a real advance in theory and knowledge, and should be in the physician's library.

PRINCIPLES AND PRACTICE OF SURGERY—Jacob K. Berman, A.B., M.D., F.A.C.S. Indianapolis, Indiana, Associate Professor of Surgery, Indiana University School of Medicine; Associate professor of Oral Surgery, Indiana University School of Dentistry; Chief Consultant in Surgery, Billings' Veterans Administration Hospital, Fort Benjamin Harrison, Indiana; Director of Surgical Education and Surgical Research, Indianapolis General Hospital. 1378 pages. 429 illustrations. The C. V. Mosbey Company, St. Louis, Mo., 1950. Price $15.00.

The author's fundamental concept in this text is the correlation of anatomy and physiology with surgery. From this point of view the author fulfills his purpose well.

The initial sections on the general surgical principles, and the local response in general body reaction to injury are well written and worth reading.

The text is very complete and well illustrated from the view-point of the pathologist. Illustrations of surgical technic, however, are limited.

Proctologists will find approximately 60 pages referable to the colon. These pages contain a good general review, and the section on megacolon is especially well done. Diverticulitis and diverticulosis are also well covered. However, aside from carcinoma, the rectum and anus is rather badly neglected. Six pages are devoted to these areas.

The book is well written throughout and should form a vaulable addition to the general surgeon's library. It is of limited value for the proctologist.

VISCERAL RADIOLOGY—Emérik Markovitz, M.D. Formerly, Scientific Collaborator of the Central Radiologic Institute of the General Hospital (Hotzknecht-Institute), Vienna; Head of the Radiologic Department of Elizabeth Hospital of the City of Budapest; Postgraduate Lecturer at the Central Radiologic Institute of the University of Budapest; Radiologist of the Steiner Cancer Clinic, Atlanta, Ga. 612 pages, 682 illustrations. The Macmillan Company, New York, N. Y., 1951. Price $24.00.

This text is well illustrated and will provide a valuable addition to any medical library. It is particularly valuable for the diagnostician.

A brief introductory section presents the fundamentals of anatomy, physiology and pathology as required by the roentgenologist for interpretation of films. The broad view-point of roentgenology as part of a general diagnostic procedure is maintained throughout.

The proctologist will be particularly interested in the section on the colon. The brief introductory material on anatomy and psychology is well written and relatively complete.

Outlines of the normal colon and rectum, and its variations, will be especially welcome. Reproductions of pathology, both in film and shaded outline form, are well done.

The text material reads easily, correlates well with the illustrations, and offers the diagnostic features of each type of pathology in adequate detail.

This book is recommended for the library of all diagnosticians, all practitioners who use x-ray, and for the well-rounded proctologist.

MEDICAL DIAGNOSIS (Applied Physical Diagnosis)—Edited by Roscoe L. Pullen, M.D., F.A.C.P., Professor of Graduate Medicine, Director of the Division of Graduate Medicine, and Vice Dean of the School of Medicine, Tulane University of Louisiana; Senior Visiting Physician, Charity hospital of Louisiana at New Orleans: Consultant in Medicine, Veterans Administration Hospital, New Orleans, Louisiana; Consultant to the Surgeon General, Department of the Army, Washington, D. C. Second Edition. 1119 pages with 601 figures, 48 in color. W. B. Saunders Company, Philadelphia, Pa., 1950. Price $12.50.

The second edition of this very excellent text maintains the high standards of the first. An excellent editorial task has been performed, and the high level contributors make this edition even better than the first.

In this text, as in the first, there is an effort to correlate clinical bedside observations with laboratory and roentgenographic tests. The methods of diagnosis offered are useful to the student, the general practitioner, and the specialist.

The text begins with a careful description of the medical history, and this is followed by a general outline of the examination of the patient. The chapters that follow evaluate the diagnostic features of examination of the skin, the eyes, the oral cavity, nose, throat and ears, the neck, the breasts, the chest, the heart, electrocardiography, the abdomen, the pelvis, urologic diagnosis, anorectal diagnosis, the extremities, the back, bones and joints, the neurologic examination, the endocrines, and the blood. The final chapters describe examination of the child, the aged and the psychiatric patient.

The proctologist will be especially interested in the chapter on anorectal diagnosis. It is well written, covers diagnosis briefly and yet with good emphasis for the general practitioner.

Each section of the book is very well written, authoritative, and integrates well the other section. This text may be recommended for all general practitioners.

A SYLLABUS OF LABORATORY EXAMINATIONS IN CLINICAL DIAGNOSIS—Edited by: Thomas Hale Ham, B.S., M.D. Assistant Professor of Medicine, Harvard Medical School; Associate Director, Thorndike Memorial Laboratory; Junior Visiting Physician, Boston City Hospital. 496 pages. Harvard University Press 1951. Price $

This interesting presentation is produced by lithography of varityped material. There are, therefore, certain difficulties of reading, due to the unjustified margins, and the appearance of a typewritten page.

Aside from this defect of book production the material is of considerable interest and value.

The section on the current cost of laboratory examinations and certain laboratory apparatus will be particularly interesting to the clinician. The chapter on laboratory data in clinical medicine is very important, and demonstrates to the physician the limits of significance of qualitative and semi-quantitative determinations.

The specific sections on laboratory examinations are well presented and developed. There are sections on Laboratory Examinations of Blood, the Urinary System, the Gastrointestinal Tract, Infectious Diseases, Diseases of Metabolism, and Extravascular Fluids.

The proctologist will find the section on "Basic Examination of the Stool" of particular interest. However, it is too brief to be considered a complete presentation.

The text will be of special interest to medical students and general practitioners. However, the internist and surgical specialist should know something about laboratory technics, their limitations and values.